

**FoodSHIELD**

www.foodshield.org

In partnership with

EJH & Associates

www.ejhassociates.com

Adobe Silver Solutions Partner

**Industry**

Government

Challenges

- Protect the U.S. food supply with secure interagency communication and collaboration platform

Solution

- Adobe Connect for eLearning
 - Adobe Connect for Web Meetings
- Innovative FoodSHIELD application built with more than a dozen Adobe solutions is an extensive, web-based platform that enables federal, state, and local government agencies, as well as universities private industry, to collaborate and respond quickly to safeguard the U.S. food supply.

Results

- Delivered centralized portal to previously disparate entities
- Increased safety of U.S. food supply through disaster planning
- Shortened life cycle of food recall
- Met evolving set of requirements
- Enhanced communication and collaboration via web and mobile
- Deployed secure training platform
- Increased development productivity threefold

FoodSHIELD

Developers integrate full complement of Adobe solutions, including Adobe® ColdFusion® and Adobe® Connect™, into a powerful rich Internet application that helps protect the U.S. food supply

Safeguard food from farm to table

FoodSHIELD is a web-based platform that creates community, increases collaboration, and facilitates communication among thousands of public and private entities involved in protecting and defending the United States food supply. From laboratories and regulatory agencies at local, county, state, and federal offices, to academia and industry, FoodSHIELD is a central portal where people in all 50 states work collectively to safeguard the national food supply through secure, integrated resources.

FoodSHIELD is sponsored by the National Center for Food Protection and Defense (NCFPD), a Department of Homeland Security National Center of Excellence, as well as by the Association of Food and Drug Officials (AFDO) and by grants from the U.S. Department of Agriculture.

Eric Hoffman, managing partner at Minnesota-based EJH and Associates (EJHA), has been the technical lead on the FoodSHIELD project since its 2004 genesis as a pilot project for the NCFPD. Since then, Hoffman has overseen the expansion of the web-based tool as it has evolved to address an increasingly complex set of requirements across many public and private groups nationwide.

During its first 18 months, FoodSHIELD underwent four different implementations according to Hoffman who, throughout the course of the project, continuously fields a dynamic set of requirements for more stakeholders as the list of participating agencies grows. "So many people have so many different ideas about collaborating and communicating on the web. And their needs are so great," says Hoffman. "How would we get everyone on the same platform and meet their needs as demands increased?"

The short answer is Adobe solutions. Driven by Adobe ColdFusion, FoodSHIELD was built entirely with Adobe technology from the ground up. As such, it demonstrates a high level of integration among Adobe software and technologies.

"The solution built on Adobe technologies has given us the ability to help secure the U.S. food supply in ways previously unimaginable—on the web, via mobile devices, and on the desktop," says Hoffman, adding that Adobe provides a more secure integrated technology platform that simply cannot be found elsewhere. "For the first time, there is a national overview of what's happening to our food supply."

Unprecedented collaboration

FoodSHIELD touches personnel across agencies responsible for inspecting and regulating the U.S. food supply, including local, state, and federal food and health inspectors, laboratory analysts, and regulatory officials. Epidemiologists and public health officials who investigate food-related outbreaks are important users, as well. In addition, emergency responders, academicians, and industry experts could use the application to streamline collaboration. Once fully adopted, the system will serve an estimated 100,000 users across a range of regions and specialties.

Hoffman explains how FoodSHIELD is transforming the way previously siloed agencies and fragmented laboratories—with their own protocols and expertise—can now interrelate. In the case of a contamination outbreak, there may be one laboratory that has figured out the cause and knows exactly what to do. Previously, that knowledge would exist in a vacuum, and other labs would waste time developing their own protocols.

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Bill Krueger
Visiting research fellow, Department of Homeland Security
Former lab director, Minnesota Department of Agriculture



State and local agencies often have their own particular ways of organizing information. "In Alaska, for example, food safety falls under the state environmental protection agency," says Bill Krueger, a visiting research fellow at the Department of Homeland Security and former lab director for Minnesota's Department of Agriculture. In other states, it might be handled by different groups, with each manager having a different title.

"We had to put the system in place to accurately identify the right department and the right person," Krueger says. "Now we can instantly send secure communications to all the appropriate staff to attend urgent meetings or review new information."

The web portal is creating a community of food safety officials in all 50 states, who will be able to take advantage of work that's already been done. A few years ago, there was an outbreak of chloramphenicol contamination in imported shrimp. Chloramphenicol, an antibiotic, is banned from the U.S. food supply because it is a suspected carcinogen.

"The moment it became a national issue, you had nine labs trying to develop a new method for testing for it," Krueger says. If the labs had been able to query a database of state food safety researchers, they could have seen that Florida already had a testing method that worked.

One idea behind FoodSHIELD is to shorten the life cycle of a recall using a central place to rapidly share documents, exhibits, and information. Now, with the updated proficiencies that the FoodSHIELD rich Internet application (RIA) brings to the table, any member can log on and rapidly find who the subject-matter expert is, how to detect the problem, and what measures to take. "When we all have access to the same systems, lives can be saved during outbreaks," says Hoffman.

Iterating the future

According to Hoffman, when the first ColdFusion prototype of FoodSHIELD was in development, Adobe was rolling out products that would holistically meet the demands of an evolving set of requirements—particularly Adobe Connect, Flash® Media Server, and a newer, more powerful Adobe Flash Player. From the start, the development team had no previous successes or templates on which to model this project. However, they knew they had to avoid the logistical nightmare of cobbling together unsupported, disparate third party Ajax libraries.

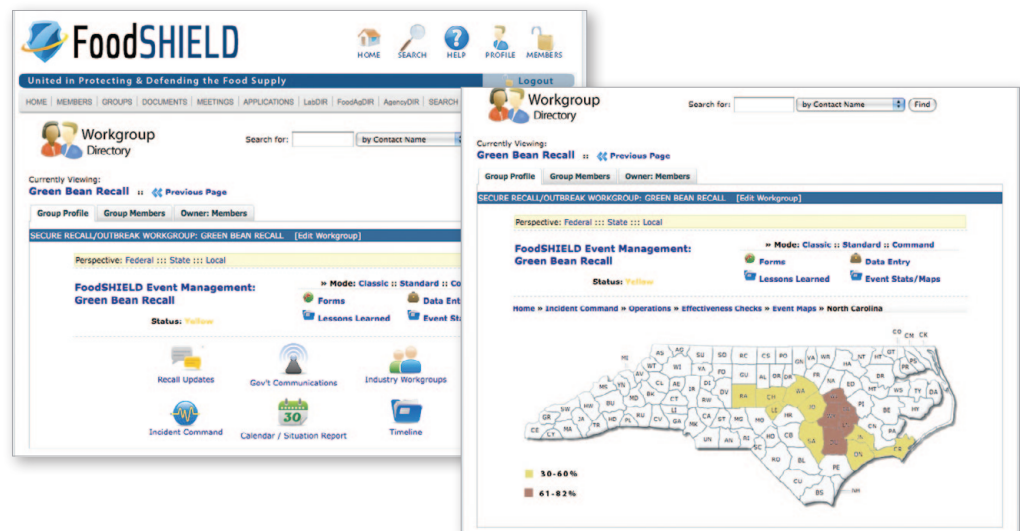
FoodSHIELD demanded such a wide breadth of capabilities and needed to handle huge amounts of data; it "screamed out" for an advanced technology that could grow along with the project, according to Hoffman. The team turned to Adobe ColdFusion as the project's underlying technology—leveraging its short development cycle and rapid prototyping capabilities, as well as its powerful ability to handle complex data captures.

"You don't need an army of ColdFusion developers," says Hoffman, explaining that they could not have delivered FoodSHIELD using Java™ or .Net because the development cycle is too long and too complex, and it could have taken a team of 20 to 30 developers. As it turned out, a lean team of just three developers got FoodSHIELD out the door.

Systems at a glance

- Adobe Connect
 - Adobe ColdFusion
 - Adobe Acrobat Pro
 - Adobe Flash Media Server
 - Adobe Flash Player
 - Adobe Captivate
 - Adobe RoboHelp
 - Adobe Contribute
 - Adobe Creative Suite Web Premium.
- Components used include:
- Adobe Photoshop®
 - Adobe Illustrator®
 - Adobe Flash Professional
 - Adobe Dreamweaver
 - Adobe Fireworks
- Adobe solutions planned:
- Adobe Flex
 - Adobe LiveCycle ES
 - Adobe AIR
- Platform:
- Mac OS, Microsoft Windows XP Professional, and Sun Solaris
 - Database-independent system currently deployed on Microsoft SQL Server 2005 and MySQL Enterprise Server 5

Adobe ColdFusion, Adobe Connect, Flash Media Server, and a host of other Adobe solutions enabled EJH & Associates to develop FoodSHIELD. The FoodSHIELD portal needed to be able to handle huge amounts of data, such as documents and information pertaining to a food recall.



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Eric Hoffman
Technical lead, FoodSHIELD,
EJH & Associates

"We had one great choice, and that was Adobe ColdFusion," says Hoffman, noting that platform growth and security are important issues as FoodSHIELD continues to migrate on top of enterprise applications in government. "Adobe ColdFusion is already part of the vernacular when we talk to government agencies," says Hoffman. In fact, some of the participating agencies have asked the developers at EJHA to convert several of their .Net applications to ColdFusion.

Only the beginning

As an enthusiastic early adopter of the solution, Hoffman sees that ColdFusion will continue to serve as a great technological foundation for the entire FoodSHIELD platform.

From a development perspective, the team is realizing significant efficiencies with ColdFusion, getting two to three times the amount of work done than in previous releases. Using built-in ColdFusion controls such as presentations and image manipulation, the team was able to rapidly add entire new sections to the application and revamp its core interface—two critical factors when working with cyclical government funding sources.

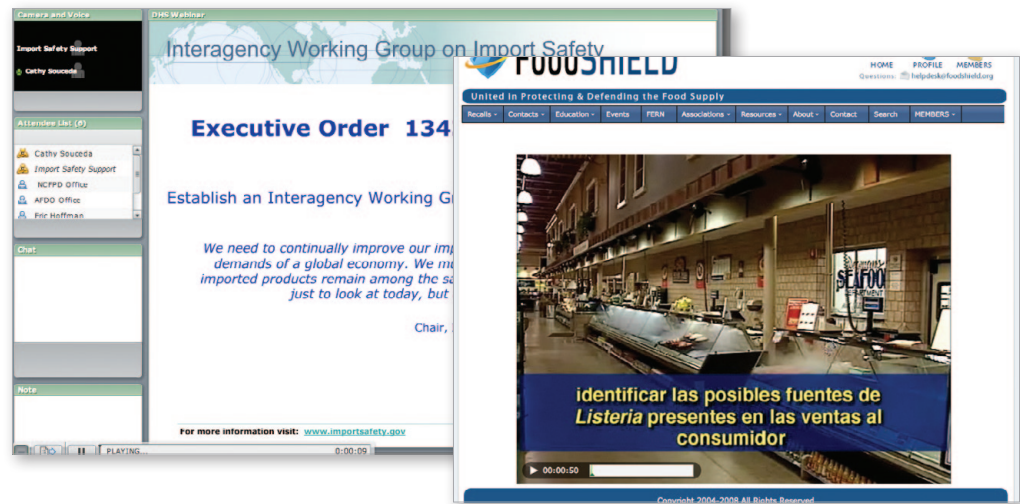
Regarding the user experience FoodSHIELD now delivers, Hoffman plainly states that people are thrilled with the new interface, noting that the experience seems less akin to a web application and more like a true interactive experience, enabling them to engage with information, with peers, and with other agencies in ways that make critical differences in the lives of many. Hoffman reports that users simply feel empowered to be productive when presented with FoodSHIELD's clean, polished interface that makes so much visual sense.

FoodSHIELD is being managed in a very heterogeneous environment with ColdFusion running on Mac OS, Microsoft® Windows®, and Sun™ Solaris™ operating systems and connecting to MySQL Enterprise Server 5 and Microsoft SQL Server databases on the backend. The multi-platform deployment is completely invisible to users and provides maximum flexibility and scalability as resource needs increase.

Inner training

The ability to communicate and collaborate via the web while working in the FoodSHIELD application is an excellent example of fully integrating Adobe Connect with a ColdFusion application. When users initiate an ad-hoc web meeting, a large-scale webinar, or participate in online training, they do not have to launch a separate application or sign in to any additional program. A licensed solution of Adobe Connect is seamlessly integrated within the rich FoodSHIELD application as part of the member portal. It is being used extensively in three key areas.

FoodSHIELD members can log on and quickly access documents and other details on a food contamination. Adobe Connect, integrated with a ColdFusion application, lets members communicate and collaborate with ad-hoc web meetings, large-scale webinars, or online training.



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First, the FoodSHIELD project management team meets virtually on a regular basis. They use the application's web communications capabilities to cost effectively move the development process forward: share wireframes, data, and reports; conduct demonstrations; and deliver video compatible with Adobe Flash Player. Convenient, easy-to-use, collaborative web communications shortcut distances among remote team members, accelerate development cycles—updated versions of FoodSHIELD are released weekly—and minimize travel time and expenses.

At the same time, researchers in government and academia can work securely together in groups of all sizes, taking full advantage of sending and responding to invitations, white boarding, live chat, and sharing data. On a larger scale, FoodSHIELD accommodates thousands of people for one-to-many seminars to broadcast food protection and defense updates and other timely national presentations. Shared calendar and notice boards also keep users current on all food regulatory, safety, and defense events.

Finally, FoodSHIELD is being used as a full-scale training platform across the user base. In fact, several of the member agencies are adopting the platform to expand their training programs and deploy them on FoodSHIELD as the de facto delivery method. For example, the development team converted offline training materials into Adobe Connect modules for the U.S. Department of Agriculture (USDA).

"The first module came out very well," says Hoffman. In it, the team leveraged a mix of video compatible with Adobe Flash Player, PowerPoint slides, quizzing, and polling. Additionally, the University of Minnesota, which has worked extensively on this project, is creating a series of training modules specific to FoodSHIELD deployment.

Hoffman predicts the next step for web communications inside FoodSHIELD is not far off and has the potential to further shorten the life cycle of a food recall. "Soon, the minute a problem is detected, any user will be able to immediately launch time-sensitive information—with Adobe Connect as the backbone of the system." Users will be able to better contain threats to the food supply by identifying the appropriate players, locating them, and immediately pushing information to them.

Future safety measures

When contamination strikes, time is of the essence. The development team is poised to build a high-end, real-time model using Adobe Flex™ to build a dynamic graphical presentation of a disaster. Flex will provide the presentation layer for the team to show where trucks are on the roads, where trains are on tracks, and where the fallout will be state-by-state when an event strikes. "We looked at Microsoft Silverlight for this implementation, but it doesn't hold a candle to Flex in terms of data points, and the ease of using and accessing the application," says Hoffman.

As effective as FoodSHIELD already is, notes Hoffman, the potential for further safeguarding the food supply is tremendous using Adobe technology to develop a national center for all U.S.-based recall activity.

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Technical lead, FoodSHIELD,
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"We're looking at the Adobe LiveCycle® Enterprise Suite (ES) to securely manage a nationwide infrastructure and large-scale scenarios," he says. The development team is beginning to explore integrating LiveCycle ES into FoodSHIELD for handling electronic forms processing to accelerate compliance issues, rights management to protect the distribution of data, and digital signatures for expediting review and approval processes.

To cover all the bases—and help ensure critical information can be delivered at any time and any place crises could occur—Hoffman and his team are looking to deliver FoodSHIELD services to mobile devices, as well as via an Adobe AIR™ application that would run in an offline environment. The Adobe AIR application would enable users to search databases to rapidly find relevant expertise and contact information, and then fully interface with web applications when Internet connections are available.

Complete complement of tools

"Adobe tools touch just about every aspect of the FoodSHIELD project," says Hoffman. From Adobe Flash Media Server that streams training videos in Flash to Adobe Fireworks® for optimizing graphics, Adobe solutions are integral to the success of FoodSHIELD. In fact, the team is looking forward to enhanced capabilities in future product releases that will enable the developers to continue improving FoodSHIELD. "We're definitely looking forward to Flash Media Server for added security and to leverage peer broadcasting."

Many other Adobe tools are integrated into this project, including Adobe RoboHelp® for building help systems, Adobe Dreamweaver® for deploying the web application, Adobe Captivate® for creating screen walkthroughs, Adobe Contribute® for managing and updating web content, and Adobe Acrobat Professional for helping to ensure that critical research documents can be distributed to as wide an audience as possible.

"We maximize the effectiveness of our project with the elegant integration of Adobe solutions," says Hoffman, who will continue to dedicate his efforts to safeguarding the food supply in the U.S. and internationally. The European Union and Health Canada have also both evaluated FoodSHIELD and have expressed interest in tying into the system.

For more information

www.adobe.com/products/adobeconnect

www.adobe.com/products/coldfusion/



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